

Young children's understanding of death

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Abstract

There is a long history of research on children's understanding of death. This article briefly reviews psychoanalytic and Piagetian literature on children's death concepts, then focuses on recent research in developmental psychology that examines children's understanding of death in the context of their developing folk theory of biology. This new research demonstrates that children first conceptualise death as a biological event around age 5 or 6 years, at the same time that they begin to construct a biological model of how the human body functions to maintain "life". This detailed new account of children's developing biological knowledge has implications for practitioners who may be called on to communicate about death with young children.

For adults, the concept of death is complex and multi-layered, incorporating social and cultural traditions and beliefs, personal and emotional issues, religious doctrines and conceptual understandings. While there is some debate about what constitutes a mature death concept (Carey, 1985; Klatt, 1991; Speece & Brent, 1985, 1996) it is certainly true that, for adults, death is fundamentally understood as a biological event, and this biological understanding informs and impacts the other facets of this complex concept. Adults recognise that death comes to all living things, that death is the final stage in the life cycle, that it is inevitable and irreversible, and that it is ultimately caused by a breakdown in the functioning of the body. The purpose of this article is to briefly overview the last 50 years of research on children's understanding of death, then describe in detail a body of recent research in developmental psychology that sheds new light on how children make the transition to an adult-like, biological understanding of death. This new research has important implications for clinicians and other professionals who may be required to address the topic of death with youngsters.

Psychoanalytic research

The first published research on children's understanding of death was carried out by investigators working from a psychoanalytic perspective. These

studies were primarily descriptive, employing open-ended interview techniques and projective methods such as story-telling or drawing, to encourage children to express their knowledge freely about death. Given the psychoanalytic orientation of these authors, these early studies of children's knowledge about death focused primarily on children's emotional responses to death, but also gauged their conceptualisations of death.

The early research revealed two insights: first, not surprisingly, that children find death to be an emotionally charged issue, and the thrust of the emotional response is sadness, anxiety and fear over the separation inherent in death (Anthony, 1940; Nagy, 1948; Von Hug-Hellmuth, 1964). These emotions are, of course, similar to those that adults feel. The second insight is that young children's understanding of death is quite different from that of adults, and this difference may intensify children's emotional responses. While there are individual differences in children's personal conceptualisations of death, the general form of their "misunderstandings" (that is, misunderstanding from an adult perspective) is fairly consistent.

The early investigators reported that for children under the age of 10 years or so, the separation of death was understood in terms of more familiar partings; death was seen as going away, either to heaven or to some place designated especially for dead people (the cemetery, the coffin) and the dead were conceptualised as continuing to live in that other

place (Nagy, 1948; Von Hug-Hellmuth, 1964). Children understood that the dead were unlikely to return, but rationalised the permanence of the separation as the dead being unable to get back, because heaven is too far away for instance, or because the coffin is nailed shut. Some children further assimilated death to sleep, imagining death as a permanent sleeping state, from which a person cannot wake (Anthony, 1940; Nagy, 1948). To explain the causes of death, children often personified death, imagining a “grim reaper” or a “bogey man” who caused some people (the old, the sick) to die. Some children also reported that death was a punishment for evildoing (Nagy, 1948; Von Hug-Hellmuth, 1964; see also White, Elsom & Prawat, 1978).

The psychoanalytic researchers concluded that young children’s capacity to understand and accept death was limited by their cognitive and emotional immaturity, and that children’s misapprehensions about death were likely to fuel their anxieties. The next wave of research on children’s death concepts was more systematic and cognitively oriented, although the observations of the early psychoanalytic researchers have been upheld. It is notable that some of the early researchers remarked that children’s misunderstanding of death derived from their inability to recognise death as a “biological” concept.

Piagetian research

A second wave of research on children’s understanding of death came in the 1960s and 1970s from a primarily Piagetian perspective. This research focused on cognitive, rather than emotional aspects of children’s understanding, and tried to tie developments in death understanding to developments in other cognitive skills that were taken as markers of the Piagetian stages of cognitive development (Kane, 1979; Koocher, 1973; Safier, 1964; Speece & Brent, 1985; White et al., 1978). In line with that perspective, this research tradition refined methods for accessing and measuring children’s conceptual understanding of death. The exclusive approach was to carry out structured interviews with children and, recognising the complexity of the concept, researchers delineated subcomponents of death understanding and evaluated children’s capacity to answer questions correctly that tapped these various elements of the concept of death. Individual researchers identified different sets of subcomponents, although they largely overlapped. Across studies, subcomponents of the complex concept of death include: (a) irreversibility or finality, the understanding that the dead cannot come back to life; (b) universality or applicability, the understanding that all living things (and only living things) die and related (c) personal mortality, the understanding

that death applies to oneself; (d) inevitability, the understanding that all living things must die eventually; (e) cessation or non-functionality, the understanding that bodily and mental functions cease after death; (f) causality, the understanding that death is ultimately caused by a breakdown of bodily function; (g) unpredictability, the understanding that the timing of (natural) death is not knowable in advance.

Using these subcomponents allowed researchers to be more specific about which aspects of death children understood, and to chart a more precise developmental trajectory for the development of the death concept. Further, a mature understanding of death was defined as mastery of all subcomponents of the death concept; however, it should be noted that different researchers identified different subcomponents, and none included all seven listed above in a single study. Across studies, a fairly consistent developmental pattern emerged. The subcomponents of universality and irreversibility are acquired first, by age 5 or 6 years (Kastenbaum, 1967; Koocher, 1973; Speece & Brent, 1992). Thus children first recognise that death happens to everyone and that the dead cannot come back to life. The final subcomponents to be mastered are cessation and causality: the understanding that death is characterised by the breakdown of bodily functioning, and knowledge about the causes of that ultimate breakdown (Koocher, 1973; Lazar & Torney-Purta, 1991; Orbach et al., 1985). It was proposed that the developmental progression of subcomponent acquisition reflected general aspects of children’s cognitive development (Koocher, 1973; Speece & Brent, 1985; Hoffman & Strauss, 1985; White et al., 1978) with the more concrete, clearly defined subcomponents (death happens to everyone and once it happens there is no going back to life) being acquired before the relatively more complex and abstract subcomponents (the internal working of the body is invisible and therefore abstract for young children, and the causes of death are multiple). Researchers in this tradition concluded that children do not grasp all the subcomponents of death, and therefore lack a full understanding of death, before age 7 at the earliest (see Speece & Brent, 1996 for a recent review).

As well as tracking the acquisition of subcomponents, the Piagetian research characterised children’s concepts of death in terms of general cognitive developmental trends: younger children’s understanding was seen as egocentric and animistic, while older children’s concepts were considered relatively consistent and logical (Kane, 1979; Koocher, 1973). These characterisations, like the observations of the early psychoanalytic researchers, are still relevant. In the first stage (Preoperational),

children think of death as a temporary or reversible state, and tend to characterise death with respect to concrete behaviours such as being still or having closed eyes, or departing. In the second stage (Concrete Operational), children recognise that all living things must die and that death is irreversible; however, they consider death to be caused by concrete elements originating from outside the body and do not recognise death as an intrinsic and natural part of the life cycle (guns, accidents and bad germs cause death, but there is no understanding of how this comes about). In the final stage (Formal Operational), children hold an adult view of death as an inevitable, universal final stage in the life cycle of all living things, characterised by the cessation of bodily function. The adult view is Formal Operational, these authors claim, because it is abstract and reflects theoretical (actually, biological) knowledge. While more modern researchers have questioned the utility of assimilating developmental changes in death understanding to Piagetian stages (e.g. Carey, 1985; see also Speece & Brent, 1996), the data from these studies, like those of the psychoanalytic research, generated a remarkably consistent depiction of the content of children's concepts of death at different ages.

Research on individual differences on children's developing death concept

The Piagetian research documenting consistent stages of death understanding established that children's understanding of death is closely tied to cognitive developmental maturation. This conclusion is supported further by studies suggesting that the effects of individual experiences and socio-cultural variables are minimal. While it seems reasonable to hypothesise that children's unique backgrounds and experiences may affect their understanding of death, the research offers only weak support for that hypothesis. Across studies, the findings on individual difference effects are often contradictory, and the bulk of research suggests that individual differences in children's backgrounds and experiences, if they have an effect, may only influence the rate of acquisition of specific, relevant subcomponents (see Kenyon, 2001 and Speece & Brent, 1996 for recent reviews).

Several studies sought to investigate whether and how personal experience of death affected children's understanding of the concept, the idea being that children who are forced to think about death may develop a mature understanding sooner than their peers. These studies did provide evidence that children who have direct, personal experience of death show relatively advanced understanding, but only of the subcomponent of universality of death

(Jay et al., 1987; Kane, 1979; but see Cotton & Range, 1990; Townley & Thornburg, 1980). Other studies showed that children who have suffered protracted illness and/or hospitalisation may be accelerated in the acquisition of the subcomponents of irreversibility, cessation or causation, reflecting a relatively early understanding of the medical/biological nature of death (Jay et al., 1987; O'Halloran & Altmaier, 1996; Spinetta, 1974).

Other studies looked at socio-cultural variables in relation to the developing understanding of death. A central issue in this research was the extent to which religious beliefs influenced children's death understanding. The data on religiosity are inconsistent, with some reports suggesting that highly religious children showed a less mature understanding of the irreversibility of death compared to their peers (Candy-Gibbs, Sharp & Petrum, 1985), but other studies revealing no effect of religiosity (McIntire, Angle & Struppler, 1972).

Given the emotional impact of the concept of death, researchers have also investigated whether children's death understanding interacts with their levels of anxiety. There is some evidence that anxious children are more likely than their peers to deny the universality of death (Cotton & Range, 1990; Orbach et al., 1986), but it has been suggested that this developmental difference is likely to result not from those children misunderstanding that death applies to all living things, but from their tendency to defend against that anxiety-provoking notion (Kenyon, 2001; Orbach et al., 1986).

Thus, the conclusion from the bulk of individual difference studies is that children's understanding of specific subcomponents of death may be influenced by their socio-cultural background or unique life experiences, but overall the developmental trajectory of the understanding of death is highly robust. The development of an understanding of death thus appears to be most strongly influenced by children's developing cognitive competency.

Studies of death as a biological concept

In the last decade or so, a new approach to understanding children's concept learning has emerged in cognitive developmental research and theorising. This new approach emphasises domain-specific conceptual acquisition over domain-general development, and further assumes that young children actively construct naive, or folk theories about the world. This model of cognitive development emphasises the role of causal-explanatory models in organising children's knowledge and driving learning about different domains of experience, and recognises the existence and importance of conceptual change in children's learning (Carey, 1985; Gopnik

& Meltzoff, 1997; Inagaki & Hatano, 2002; Wellman & Gelman, 1992).

One of the seminal works in this new tradition analysed the development of young children's conceptions of the biological world (Carey, 1985). This work presented a series of studies on children's inductive reasoning, in which children of various ages were asked to judge the extent to which different entities (including people, various animals, insects and inanimate objects) possessed biological properties (such as the capacity to eat, breathe, feel emotion, reproduce, die, etc.). The pattern of data from this now-classic series of studies showed that before the age of about 10, young children do not have a coherent understanding of how biological phenomena relate to each other and to living things. Carey found that children's judgements about an entity's biological status (probed with questions such as: does it eat? does it sleep? does it have babies?) were linked to the entity's similarities to people and to their potential for behaviour, rather than their biological status as living things. Thus young children asserted that dogs and mechanical monkeys were more likely to possess biological properties (e.g. breathing, the capacity to reproduce) than bees or plants. Carey (1985) argued that young children's concepts of biological entities and phenomena, including the concepts of *animal*, *baby*, *life*, *death*, *growth*, etc., are grounded in their more familiar and earlier-developing framework of folk psychology and that adult-like notions about the biological world do not emerge until sometime in middle childhood.

Specifically with respect to the concept of death, Carey (1985) cited the extensive literature on children's death understanding, as well as her own data, to make her case. As reviewed above, young children assimilate the notion of death to more familiar, relatively well-understood phenomena, including departure and sleep; so instead of framing death as a biological phenomenon, young children frame it as a psychological/behavioural phenomenon: going away (for good) and/or going to sleep (for good). Carey (1985) argued that this fundamental misunderstanding of death comes about precisely because young children have not yet constructed a coherent folk theory of biology that allows them to integrate what they know about death with other biological phenomena such as health, illness and the life cycle. Lacking a biological framework for understanding these phenomena, young children fall back on their earlier-developing folk psychological theory, and so interpret what they know about death in the context of their knowledge of human behaviour.

While there is a good deal of debate about the specifics of Carey's (1985) developmental account (Au & Romo, 1999; Hatano & Inagaki, 1994; Keil, 1992; see papers in Siegler & Peterson, 1999), there is

now general agreement that a major shift occurs, between the ages of 5 and 8, in the way that children think specifically about biological phenomena. This shift affects children's reasoning about a number of key biological concepts, including reproduction and genetic inheritance (Springer, 1995; Springer & Keil, 1989), growth (Rosengren et al., 1991), disease transmission and illness (Kalish, 1996; Solomon & Cassimatis, 1999), the structure and functioning of the human body (Jaakkola & Slaughter, 2002) and death (Slaughter, Jaakkola & Carey, 1999). This important shift in children's thinking about the biological world allows for a deeper and more detailed account of how the concept of death comes to be understood by childhood.

Over the last several years, we have completed a series of studies on children's reasoning about the human body, life and death, with a view toward documenting and explaining when and how these notions are understood within a folk theory of biology. The results of these studies indicate that it is between 4 and 6 years of age that children first begin to understand the human body as a biological entity. At this age, for the first time children's reasoning about the body is organised around a biological (as opposed to psychological) causal-explanatory model: the notion of "life". While preschoolers make assertions such as the heart is for loving, the lungs are for talking, and the stomach is for eating (reflecting their reliance on folk psychological or behavioural notions to interpret biological phenomena), older preschoolers and school-aged children assert that the body and the major vital organs within it all function with respect to a unified biological goal: to maintain "life" (Jaakkola & Slaughter, 2002; Slaughter et al., 1999). Thus older children consistently report that the heart, lungs and other internal organs are for keeping you alive. This clear shift in children's reasoning is the first evidence of children having constructed an integrated model of the body, organised around a unifying causal-explanatory principle that is, for the first time, not a psychological one. This emerging notion of "life" as the ultimate goal of human body functioning is, arguably, the child's first truly biological notion, because it applies only and appropriately to the domain of biology. Further, the construction of this model of the human body as a "life machine" serves to organise and structure children's knowledge about the human body and other biological phenomena, and also serves to guide subsequent learning about biological phenomena (Inagaki & Hatano, 2002).

The acquisition of the first folk biology, the "life" theory of the body, results in a change in children's understanding of death; this is the point at which children move from a fundamental misunderstanding

of death as a behaviour (sleeping, going away) to an initial understanding of death as a biological phenomenon, governed not by what people want or plan to do, but by a different set of principles, namely biological ones. Once children come to conceptualise the body as a "life machine" then they also recognise that any major malfunction of the body will result in the cessation of life—that is, in death. So at the same time that children begin to understand something about the body and the biological goal of maintaining life, their understanding of death also shifts, and they start to conceptualise death in terms of the biological concepts of body function and the life cycle. As noted above, it is around ages 4 to 6 years that children begin to demonstrate some elements of a mature understanding of death reflected in their acquisition of the subcomponents of universality and irreversibility: the recognition that death happens to all living things and that the dead do not come back to life. By age 7 or so, children have also come to grips with the ultimate cause of death, reflected in the acquisition of the subcomponents of cessation and causality: they realise that death is ultimately caused by the breakdown of bodily functioning, which prevents the body from functioning to maintain life.

We have demonstrated this link empirically between children's acquisition of the folk "life" theory of the body, and their understanding of death, in two separate studies. The first, a cross-sectional study, was run in North America, and showed a strong correlation between children's tendencies to reason about the body with reference to the biological goal of "life" and a relatively mature understanding of death (Slaughter et al., 1999). In this study, 4–5-year-old children were classified as being "life theorists" or not, depending on the extent to which they referred to the notion of "life" when answering questions about the human body and how it functions. Life theoriser children tended to assert that the heart, lungs, and other internal organs are for "life", thereby revealing their folk biological model of the human body. Those children who were life theorists were significantly more likely to demonstrate understanding of various subcomponents of the death concept (applicability, irreversibility, inevitability, cessation), compared to their same-aged peers who had not yet acquired a life theory of the body. Thus the acquisition of the biological causal-explanatory notion of life was linked to a relatively mature, biological understanding of death. The children who did not yet reason with reference to "life" showed relatively immature reasoning about death, in line with the psychoanalytic and Piagetian research; to characterise, these children said that death applies (only) to old and sick people, that the dead can come back to life, that the

dead need to eat, drink and breathe air (just like everyone else), and that death is caused by poison or guns or bad food. Thus this study replicated previous research, by showing that young children conceptualise death in terms of people and how they behave, rather than human biology and its laws, but showed that this stage lasts only until children construct a folk biological framework for understanding the body, life and death.

A second study, run in Australia, again demonstrated a link between children's acquisition of the folk biological, "life" theory of the body, and a relatively mature understanding of death (Slaughter & Lyons, 2003). This second study took a short-term longitudinal approach, in which 3–5-year-old children were trained explicitly to reason about the human body with reference to the notion of "life". Thus children in this study who believed that the heart is for "when you have a boyfriend" and blood is for "when you need a bandaid" were taught explicitly that the heart pumps blood all around the body and this is essential for life, that blood carries food and oxygen to the body and this keeps us alive, etc. Two weeks after this training, children were assessed for changes in their concepts of death. The results showed that children who learned to reason about body functioning in terms of the biological goal of maintaining life also showed concomitant maturation of their understanding of death. After training, children were more likely to assert that death applies to all living things, that death is caused by cessation of bodily functioning, and that death is irreversible. We argued that this striking development in children's understanding of death came about by virtue of their acquiring a coherent biological framework—the "life" theory—within which they were able to restructure their knowledge about death. By assimilating death to a biological folk theory (how the human body functions to maintain life), children came to a relatively mature understanding in a short span of time.

Our research on the development of children's concepts of life and death suggests that this developmental pattern is stable across Western (North American and Australian) cultures. Further, research on the development of folk biological concepts in non-western children supports the cross-cultural generalisability of the developmental pattern described here; in a programmatic series of studies Inagaki & Hatano (2002) have shown that Japanese children also acquire a "life" theory (in Japanese, the term is "ki") around age 4 to 6, and this important acquisition has wide-ranging implications for how children conceptualise a number of biological phenomena. In line with the literature on individual differences in children's death concepts, it should be noted that some minor variations in children's folk

theories of biology (particularly the extent to which life and death are attributed to plants) has also been documented (Hatano et al., 1993).

Implications for practitioners

Anyone who must address the issue of death with a young child faces a difficult task. Talking about death is both highly emotional and, for young children as reviewed above, cognitively complex. The research demonstrates that children's understanding of the phenomenon of death can be very different from that of adults, mainly, we argue, because young children do not understand death as a biological event. This has important implications for how the concept of death should be broached with young children. A number of researchers and practitioners have sensibly noted that death should be discussed in concrete, unambiguous terms with children (e.g. O'Halloran & Altmaier, 1996; Shapiro, 1994; Webb, 1993). The recent cognitive developmental research generates more specific guidelines for talking about death with children, which acknowledge the importance of children's underlying folk biology (or lack of it) to their capacity to conceptualise death.

Since preschool-aged children assimilate death to departure and/or sleep because they lack a biological framework for understanding death, then adults working with children must be aware of this misunderstanding and make every effort not to inadvertently fuel it. For instance, one approach to consoling a grieving child might be to comment that "she's at peace now" or "he's gone to be with God" or "she'll have a better life in heaven". Such comments, from an adult point of view, do not discount the biological fact of death, and may serve to alleviate some of the emotional impact of losing a loved one. However, such comments have serious implications for children's understanding: from the cognitive developmental perspective outlined above it is clear that they would serve only to reinforce a non-biological understanding of death as sleeping or as living on elsewhere, and therefore they would be likely to generate confusion and concern in young children about whether the loved one is happy, when the loved one will wake up or return, and why the loved one chose to depart in the first place.

Even when adults provide explanations to children that are clear and straightforward, such as "he died because his heart gave out" or "the doctors did all they could, but her body was too weak to keep living", those explanations may not be significant for young children if they presuppose a biological conceptualisation of the human body. Explanations that frame death in terms of a breakdown of the body, while concrete and unambiguous, are likely to be meaningless to a young child who does not

recognise death as being characterised and ultimately caused by the cessation of bodily function. A child who believes that the heart is for loving is in no position to understand that someone died because his heart gave out. Similarly, attempting to console a grieving child by noting that "his time to die had come" or "she had a long and good life" may fail because such explanations may be cognitively unassimilable for young children who do not recognise death as the inevitable final stage of the life cycle. While children may nod and appear to understand biological explanations of death, we argue that unless they have constructed an initial folk theory of biology, those explanations will have no explanatory power and therefore no capacity to alleviate the negative emotions brought about by the death of a loved one.

In order to help children understand and cope with the phenomenon of death, it may be necessary to take time to provide them with relatively detailed explanations that introduce or incorporate biological notions of the life cycle and body function. Our work has shown that children as young as age 4 can understand death as a biological event, provided it is framed in the context of developmentally appropriate folk biological theory: the "life" theory of the body (Slaughter & Lyons, 2003). Our studies have demonstrated that children can adopt a biological understanding of death, provided they have, or are given an opportunity to learn, relevant biological notions that focus on how the human body functions to maintain life. Those who are required to talk to children about death will improve their chances of effective communication if they do two things: first, acquire a feel for the child's folk theory of biology, by probing the child's concepts of the human body, life and death. Children's answers to open-ended questions can be relatively un-intrusive and at the same time highly informative, and the documented regularity of children's misunderstandings about the human body and death can serve as a guide to an individual child's developmental level. The child who says that the heart is for loving, lungs are for talking and the stomach is for getting hungry has not yet acquired or constructed the "life" theory of the body, and therefore is unlikely to understand any talk about death as a biological phenomenon.

Second, be conscious of children's folk theories when framing explanations about death. Young children who are already "life theorists" will be most amenable to explanations that rely on and appeal to the basic notions of the life theory; namely, the notions that the human body functions to maintain life; that death, as the opposite of life, must involve the cessation of all normal bodily activity; that death must apply to all things that are endowed with life; and that death must be caused, ultimately, by a breakdown in some aspect of body functioning.

This constellation of beliefs forms the core of children's first biological understanding of life and death, and practitioners who are aware of children's capacity to entertain these notions are therefore in a good position to frame discussion about death in terms that young children can understand. Conversely, children who do not yet possess the "life" theory will benefit from relatively elaborate, repetitious explanations that introduce the folk biological notion of "life". In our training study 90% of preschool-aged children acquired the "life" theory of the body, in a short span of time, with relatively minimal instruction, and this developmental change had direct effects on their concepts of death. While not all children will respond to attempts to teach a biological framework for understanding the human body and death, especially if emotionally challenged by grief or anxiety, our data indicate that framing talk about death in terms of children's folk biological notions could improve chances of children being able to effectively communicate with adults about the issue of death.

Coming to conceptualise death as a biological phenomenon is only one step, although arguably a crucial one, in children's journey towards an adult understanding of death. Recent research documenting the relevance of children's developing folk theory of biology to their understanding of death provides practitioners with a new and informed perspective for guiding children on that journey. Understanding death as the inevitable final stage of the life cycle is not going to eliminate negative emotions about death, but may ameliorate some of the pain that comes from young children's failure to conceptualise death as a part of life.

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